

ABSTRACT

An ion pump having conductive electrodes on both sides of an insulator which may form a number of channels. These electrodes may provide electrical discharges which have a corona or cold cathode emission for ionization. The electrodes and the insulator may be layers having openings that form the channels. The openings in one electrode layer may have a sharp-like configuration and the openings in the other electrode layer may have a non-sharp-like configuration. Ions may be predominately in-situ generated proximate to the sharp-like openings and have the polarity of these openings. These ions may induce a fluid flow through the channels of neutral molecules as a result of a force and viscous drag of the ions. The sharp-like openings may have nanotube whiskers or a thin film structure for facilitating an electrical discharge.